18. (amended) The instrument of claim 14, wherein said thickness is between approximately 0.15 mm to approximately 0.5 mm.

24. (twice amended) A tube, comprising:

a rigid proximal region;

a distal region; and

a flexible region disposed between and connecting said rigid proximal region and said distal region, said flexible region with a tube wall having a slit, said slit winding in a helical path about a longitudinal axis of said tube and meandering back and forth with respect to said helical path, wherein said meandering slit defines alternating teeth and recesses, wherein each recess has an associated tooth and each tooth is disposed in a recess, said teeth and said recesses having a shape which prohibits an axial slippage of said teeth out of said recesses, wherein said slit has a width of less than approximately 1 mm and said wall of said inner tube has a thickness between approximately 0.1 mm to approximately 0.7 mm, with said helical path having a pitch of more than approximately 0.5 mm/winding.

27. (amended) The tube of claim 24, wherein said thickness is between approximately 0.15 mm to approximately 0.5 mm.

Remarks

The Examiner has rejected claims 14, 16 to 20, 24, 26, 27 and 28 under 35 USC 102 (e) as being anticipated by Krause ('922). Claims 21 through 23 stand rejected under 35 USC 103 (a) as being unpatentable over Krause in view of Trott ('738).

In addressing these rejections, the applicant has amended independent claims 14 and 24 to include limitations disclosed in former claims 17, 19, 26 and 28 which have accordingly been cancelled. Claims 18 and 27 have been amended to change the dependencies to the respective independent claim.

The applicant respectfully disagrees with the interpretation of the Krause reference taken by the Examiner with respect to claims 17, 19, 26 and 28. In particular, the applicant has converted the geometric disclosures of Krause in column 5 as quoted by the Examiner into a range of slit width, wall thicknesses, and pitches in the dimensions of claims 17, 19, 26 and 28 of the invention with the following results: Krause discloses a slit width which is greater than or equal to 1.27 mm and less than or equal to 1.9 mm. Krause discloses a wall thickness which is greater than or equal to 1.43 mm and less than or equal to 8.45 mm. Krause discloses a pitch which is greater than or equal to 1.32 mm and less than or equal to 144 mm. The independent claims as now amended recite a slit width of less than approximately 1 mm, a wall thickness between 0.1 mm to 0.7 mm and a helical pitch of more than approximately 0.5 mm/winding. Therefore, the Krause reference does not anticipate independent claims 14 and 24 as amended since significant degrees of non-overlapping recited respective ranges are present.

Nor does the Krause reference, in combination with any of the prior art of record, render the independent claims obvious for the following reasons. Krause does not disclose the upper limit of the slit width now recited in the instant invention nor the range of wall thicknesses. Nor does Krause disclose the lower limit for the pitch. One of average skill in the art familiar with the Krause reference and of the ranges quoted therein would not be motivated to change those ranges to those recited in the instant invention as amended since Krause is completely silent on the relationship between the recited ranges and the structural properties of the inner tube. Although these ranges must clearly effect the structural properties of the tube no statement is given by Krause as to in which way they do so. For this reason one of average skill in the art must interpret the Krause reference at face value and come to the conclusion that any ranges outside of the range quoted by Krause would be unacceptable for the performance of the tube.

In accordance with the instant invention as amended, the quoted ranges have been found to be particularly important to the flexibility of the inner tube for the applications of interest to the invention while maintaining significant structural integrity and strength for the tube. The invention therefor recites features associated with advantages which are not disclosed nor suggested by any of the prior art of record and is therefore sufficiently distinguished from that prior art to warrant patentability. The applicant therefore submits that this application is in a position of allowance.

Requests

The instant application is a re-submittal of an application which was lost by the US PTO and an associated petition requesting re-assignment of the current filing date to the filing date of the lost application has been filed in response to the Notice to File Missing Parts. Prior to passage of the instant application to issuance, the applicant therefore requests referral of the file to the Petitions Office for a decision on that petition.

No new matter has been added in this amendment.

Respectfully submitted,

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Enclosures
Amended claims 14, 18, 24 and 27 in square-bracketed and underlined form

14. (twice amended) A surgical instrument for the removal of tissue, the instrument comprising:

an outer tube having an opening in a distal region thereof for accepting the tissue;
an inner tube disposed within said outer tube, said inner tube having a rigid proximal region for transmitting forces or momenta acting on said inner tube proximal region to a distal region of said inner tube, said inner tube having a flexible region between said inner tube proximal region and said inner tube distal region, said inner tube comprising a wall in said flexible region, said wall having a slit in said flexible region, said slit winding in a helical path about a longitudinal axis of said inner tube, said slit meandering back and forth with respect to said helical path, wherein said meandering slit defines alternating teeth and recesses, each recess having an associated tooth and each tooth being disposed in a recess, said teeth and said recesses having a shape which prohibits an axial slippage of said teeth out of said recesses, wherein said slit has a width of less than approximately 1 mm and said wall of said inner tube has a thickness between approximately 0.1 mm to approximately 0.7 mm, with said helical path having a pitch of more than approximately 0.5 mm/winding; and
a cutting tool disposed at said distal region of said inner tube for cutting the tissue subjected to an influence of

said cutting tool in a vicinity of said opening in said distal region of said outer tube.

18. (amended) The instrument of claim [17] 14, wherein said thickness is between approximately 0.15 mm to approximately 0.5 mm.

24. (twice amended) A tube, comprising:

a rigid proximal region;

a distal region; and

a flexible region disposed between and connecting said rigid proximal region and said distal region, said flexible region with a tube wall having a slit, said slit winding in a helical path about a longitudinal axis of said tube and meandering back and forth with respect to said helical path, wherein said meandering slit defines alternating teeth and recesses, wherein each recess has an associated tooth and each tooth is disposed in a recess, said teeth and said recesses having a shape which prohibits an axial slippage of said teeth out of said recesses, wherein said slit has a width of less than approximately 1 mm and said wall of said inner tube has a thickness between approximately 0.1 mm to approximately 0.7 mm, with said helical path having a pitch of more than approximately 0.5 mm/winding.

27. (amended) The tube of claim [26] 24, wherein said thickness is between approximately 0.15 mm to approximately 0.5 mm.